

## Letter from Alexander Graham Bell to Mabel Hubbard Bell, January 11, 1892, with transcript

ALEXANDER GRAHAM BELL TO MABEL (Hubbard) BELL Beinn Bhreagh, C. B. Monday, Jan. 11th, 1892. Sunday, Jan. 10th, 1892.

Spent afternoon among my sheep. Old Mr. McNeil was there smoking his pipe. Took him to the Lodge — lent him a pair of slippers to save the rug — and gave him supper. Angus McKillop — Johnny's brother — was also invited. Poor boy he hasn't had a decent bit of bread for an age. It was a pleasure to see him pitch into Mrs. Martin's nice white bread.

After supper — I retired to bed as I felt tired and sleepy — and Mr. Ellis wanted me to go shooting with him at daybreak. Thought I could get a nap — and then sit up for the morning. Awakened at 11 o'clock and found Mr. McCurdy had come home and was taking a late supper — Mrs. Martin had not retired. Stayed up talking till 1:30 — then took my bath — and retired to bed with a book and writing materials — but as I felt tired — thought I better take a little further nap — before setting to work on my usual midnight letter. Was awakened by Mr. McCurdy — with the mail! — Ten o'clock in the morning. Poor Mr. Ellis did not get his shooting after all.

Today has been an eventful day. All hands busy on the mountain excepting Mr. Ellis and myself, John McKillop and his brother have been weighing the sheep — and Mr. McInnis and Photographer McCurdy have been taking their pictures.

In Lab. Mr. Ellis and I tried to get my dynamo machine (a gramme machine purchased in Paris many years ago) — to work — in order to try the Electric Heating Idea. We connected it up 2 I thought it should go — with an incandeecent lamp — but not a ghost of light could we get.

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We then cleaned it up part by part — and varied arrangement of wires and etc., looked up books on Electricity and etc., but all to no purpose. Couldn't find anything wrong — and therefore so chagrined at my failure — that I spent whole day over the thing trying to find out what was wrong. At last it struck me that the thick wire of the armature and etc., indicated that the machine should give current of quantity rather than intensity — and that therefore it might prove insufficient to illuminate the lamp — and yet be sufficient for purpose I wanted — vig — heat.

This turned out to be the case. A thin piece of German silver wire was instantly made white hot by the current — and melted. Then we tried heating idea — and result is grand success.

Took glass pipe about a foot long and about one inch in diameter — Plugged up lower end with a cork through which passed two thick copper wires (a,b) forming the support for a short spiral (c) of fine German silver wire.

A — B Two thick copper wires.

C. Spiral of fine German silver wires.

D. Dotted line shows surface of sealing-wax to make all tight.

glass-tube cork. to dynamo

3

If dynamo had been operated with wires as shown — the spiral (c) would have become white-hot — some part of it would have melted — and thus spiral would have been destroyed. Before turning on dynamo therefore — the glass tube was filled with sperm oil — and a thermometer was placed in upper part of tube — so as to note change of temperature. It was not until 8:47 P.M. that we were ready to try the experiment. By

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this time we had an interested audience composed of Mr. McInnis, Mr. Martin and John McKillop.

At 8:47 P.M. Mr. Ellis took the temperature of the oil vig: 61°F. At 8:48 I gave instructions to start the dynamo. Instantly the oil near the spiral gave a sort of leap — and rapid circulation of oil took place. Current of heated oil rose up — and cooler current came down sides of glass tube.

thermonter glass tube oil spiral & connections wires to dynamo.

Following were the temperatures observed at the thermometer:

Time — Temp.

8:49 P.M. 88°F

8:50 — 110 —

8:51 — 127 —

8:52 — 138 —

8:53 — 155 —

8:54 — 168 —

8:55 — 178 —

8:56 — 189 —

8:57 — 199 —

8:58 — 206 —

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8:59 — 213 —

Time — Temp.

9:00 P. M. 221°F

9:01 — 227 —

9:02 — 229 —

9:03 — 234 —

9:04 — 238 —

9:05 — 240 —

9:06 — 242 —

9:07 — 245 —

9:08 — 248 —

9:09 — 250 —

9:10 — 251 —

Time — Temp.

9:11 P.M. 253°F

9:12 — 254 —

9:13 — 255 —

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9:14 — 256 —

9:15 — 255 —

9:16 — 255 —

9:17 — 256 —

9:18 — 256 —

9:19 — 256 —

9:20 — 256 —

4

I consider this a very remarkable experiment. It really seemed marvelous that such an insignificant bit of wire — (only I think about three inches in length — and as fine as a hair — coiled up into a spiral little more than an inch in length) — It seemed as I have said — Marvelous — that such a slight heating surface should have been able to sustain the temperature of quite a large mass of oil at 256°F. — a temperature far above the boiling point of water.

Not only can oil be used for heating houses and etc., — but cooking can be done also. To make sure of this — we put some water in a test-tube and placed it at top of oil-tube in place of thermometer.

In a short time the water in the test-tube boiled.

Test-tube with water oil Electric Heater

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Grand success. Quite excited at possible applications. Just as Electric Lighting must gradually take the place of gas — so I believe Electric Heating will take the place — of dirty coal in cooking — and be used in place of furnaces and etc., etc.

A word of caution my dear — Remember these things have not been developed as yet — and I don't want you to talk about the matter at the present time.

Laboratory is now closed for the season. Mr. Ellis will spend tomorrow in putting tools and etc., away.

Just as we had concluded experiment of boiling water — 5 we were all startled by the appearance of Mrs. Martin — who rushed almost breathless into the laboratory and subsided on a stool with a gasp of “Fire.” Instantly laboratory was vacated — Mr. Martin, Mr. McInnis and John McKillop ran a race to the Lodge. I followed more leisurely.

Stove pipe red hot — showers of sparks from chimney — that was all — no cause for extreme alarm displayed. Everyone seemed in a panic — Mr. Martin had the fire-hose out — squirting water all over himself in so doing. Johnny seemed to be everywhere at once — and I caught Mr. McInnis rushing wildly to the stove in the hall — with a large tin of water. I stopped him just as he was about to throw it on the fire. A nice mess he would have made of your parlor — had I been a moment later.

I didn't think the stove much mattered when the trouble was in the stove pipe higher up. Real danger in attic where nobody was. Went up there with Mr. McInnis and Johnny. Found some brown paper on floor on fire — smouldering. Put it out. Stationed Johnny there to watch it — with water from cistern. Then sent Mr. McInnis up ladder to roof outside with fire-hose to deluge roof — as the quantity of burning stuff pouring out of chimney decidedly alarming.

Found fire-hose worked admirably — wet the whole roof on both sides — and let chimney blaze away. Fire soon burned itself out. The first thought of Mr. Martin and Maggie — was

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for Douglas McCurdy. George and Susie have gone home — and Douglas is here now. Maggie snatched the little fellow out of bed and carried him down stairs, blankets and all. Just as 6 things were quieting down Mr. McCurdy returned from Baddeck. He had been to see old Mr. Campbell upon some business and had taken with him Mr. Macdonald, the Custom House officer. Mr. Campbell greeted Mr. McCurdy cordially — but when he saw Mr. Macdonald he sprung up with an oath — and siezing a sword, rushed at Mr. Macdonald like a fiend.

He slashed away at him in a most murderous fashion — until overpowered. Mr. McCurdy seemed to be quite unnerved by the whole thing.

Altogether this day has been full of excitement.

Received a cablegram from you yesterday — from Florence — in answer to mine.

We leave here tomorrow evening for the Grand Narrows. Expect to reach Boston Thursday night. Washington Sunday — Meeting of Directors of A.A.P.T.S.D. at your father's house — Monday — Sail in the Ferra from New York Saturday the 23rd.

Most extraordinary weather here. No frost — no snow — beautiful spring weather. Actually saw a swarm of midges or little flies today — air quite warm. I suppose the cold snap will come after we have gone.

Much love to dear Elsie and Daisy — and a heartfelt to yourself.

Your loving husband, Alec.